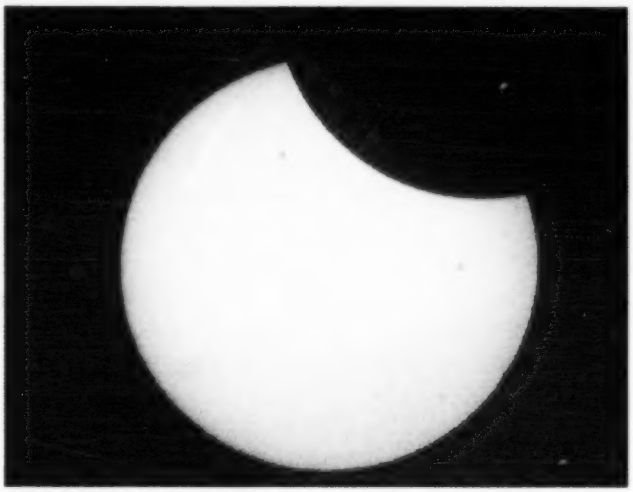
**Column 434**

# Local interest in solar astronomy is heating up

**by Erling Friis-Baastad**

Many of us suspect that the land of the midnight sun must be a frustrating place in which to be an amateur astronomer. For months at a time, we look into the night sky and see, well, daylight -- no planets, no stars, no galaxies, clusters or nebulae.

However, for a select but growing number of sky observers, the sun has added a whole new dimension to their passion.



This partial solar eclipse was photographed in 2000 from Fish Lake Road.

(photo: James Cackette)

James Cackette, a major energy source within the local Northern Deep Sky Observers Club of Whitehorse, is likely to bring many others into the solar field with his enthusiasm for this branch of science.

The sun is an amazing object for amateur study, says Cackette. "There's so much to see. It's always changing. Sunspots do their dance around it and you can watch these change during a period of a day or so..."

"Coronal loops come up. They are 30 times the size of Earth and there are hundreds, thousands of them..."

And, though Cackette hasn't witnessed the phenomena yet, every day as many as a thousand objects -- comets and all manner of debris -- reeled in by the sun's gravity, crash into its photosphere. That's the surface layer of the sun observable with optical telescopes.

Not long ago solar astronomy was prohibitively expensive for amateurs. That is changing, says Cackette. As is happening with other technologies -- computers for instance -- ever-more-effective equipment is now coming within range of the average working person's purse.

The more accessible the technology, the safer the solar science.

Nighttime viewing far from perilous, unless you have a huge telescope and give yourself a hernia packing it around, says Cackette. And a Yukon winter night might lead to a nip of frostbite, but solar observing can be seriously dangerous when not

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approached cautiously.

"Caution, caution, caution," he stresses. "Viewing the sun without proper precaution can result in vision impairment and blindness."

Cackette once suffered "weld flash," terrific pain in his unprotected eyes after briefly watching at a welder at work.

"I can only imagine what getting blasted by the sun would be like," he says. Through a telescope it can be tantamount to "the sun burning your eye at 300 times normal brightness."

Even when using filters, caution is advised. The sun's heat can melt the glue between lenses and render an eyepiece useless. Cackette always checks the sun's image on a piece of paper before committing his eye to a filtered lens.

For getting started in solar astronomy, he recommends *The Backyard Astronomer's Guide* by Terence Dickenson, as a place to acquire basic background knowledge.

He also mentions *Star Wares: The Amateur Astronomer's Ultimate Guide to Choosing, Buying & Using Telescopes and Accessories* by Philip S. Harrington, which provides useful information on all branches of observing, including safe solar studies.

Cackette is thrilled with -- and saving up for -- the new Coronado Personal Solar Telescope.

"It's very, very small in size, looks like a spotting scope," he says. "But aperture is not everything." In fact, in solar science, it can be a hindrance, allowing in too much light and heat.

The little PST is built around a "sub angstrom hydrogen alpha filter," which helps ensure eye safety, while allowing breathtaking views all manner of solar phenomena on different light wavelengths.

Finally, he suggests monitoring the SOHO site (sohowww.nascom.nasa.gov), for continually updated photographs of the sun made at a variety of temperatures by a satellite "with the most amazing telescope you've ever seen."

SOHO is a joint initiative of NASA and the European Space Agency.

"I've been into astronomy for 10 or 12 years and I still visit their site once or twice a week," he says.

The flip side of having the sun monitored by such complex professional equipment is that, unlike with nighttime astronomy (especially meteor counts, comet hunting and variable star monitoring), the opportunities for amateurs to make contributions to solar science are limited.

Between satellites, Kitt's Peak Observatory in Arizona and many other professional observatories around the world, the sun is under observation 24 hours a day, every

day.

There are good reasons for astronomers to be always aware of what the sun is up to.

On the most practical and basic level, solar storms play havoc with telephone, radio and television communications. Powerful blasts of solar radiation can permanently silence satellites.

Forewarned, engineers can shut satellites down for the duration of the most devastating solar storms.

Beyond that, however, the sun is a fairly representative mid-range star. "As we study our sun we learn more about other suns and more about the universe, where we come from, how we got here," says Cackette.

"We can see the ways solar systems are made and galaxies, the how and why all the way down the line."

And there's a philosophical dimension experienced by professionals and amateurs alike. We look into the night sky or at the tumultuous storms on our sun, and we begin to realize how "infinitesimally small" we and many of our concerns are, he says.

"You're so used to your own daily life it seems to slip the brain what's actually going on in the big picture."

The enormity of the sun as observed on the SOHO site or through a PST may be humbling, but "imagine a globular cluster, hundreds, thousands of stars all clustered together. And that's just a little pin drop in space."

For more information about sharing in the wonders of the sky (day or night), e-mail the Northern Deep Sky Observers Club at jcackette@hotmail.com.